Part E1: Numbers and classes of the texture features extracted

The texture features extracted were as follows: *(i)*, 72 first-order; *(ii)*, 56 grey-level dependence matrix (GLDM); *(iii)*, 92 grey-level co-occurrence matrix (GLCM); *(iv)*, 64 grey-level run-length matrix (GLRLM); *(v)*, 64 grey-level size zone matrix (GLSZM); *(vi)*, 20 neighbouring grey-tone difference matrix (NGTDM); and *(vii)*, 460 wavelet-based texture features using five different wavelet transformed images (five different wavelets with different combinations of the low and high-frequency bands) along with the other six feature groups.

Part E2: Wrapper-based classifier-specific feature selection with nested cross-validation

The ranking metric of the search method was a feature evaluator that calculates the worth of an attribute by computing the probabilistic significance as a two-way function [1]. The attributes that underwent two or more inner cross-validations were included in the outer cross-validation. Then, the features that underwent two or more outer cross-validations were chosen for the initial model development. The whole algorithm was repeated by excluding the least cross-validated features one-by-one until the model achieved its highest accuracy. The measure used to evaluate the performance of the attribute combinations in the feature selection process was accuracy for discrete class and root mean squared error for numeric class.

Part E3: Selected features

TexF1, grey-level co-occurrence matrix (GLCM) Idn (inverse difference normalised) in the image with a LoG filter of 2 mm; TexF2, the first-order maximum in the image with a LoG filter of 6 mm; TexF3, the first-order median in the image with wavelet energy in low/high-frequency bands; TexF4, neighbouring grey-tone difference matrix (NGTDM) coarseness in the original image.

References

1. Ahmad A, Dey L (2005) A feature selection technique for classificatory analysis. Pattern Recognit Lett 26:43–56 . doi: 10.1016/j.patrec.2004.08.015